Attorney Docket No.: 76138/111

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3661
Examiner: T. TO

Applicant	:	Thomas LENZ, et al.
Serial No.	:	09/618,853
Filed	:	July 18, 2000
For	:	PROCESS FOR AUTOMATIC DRIVE SLOP CONTROL (ASR)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Diane Rosa — May 27, 03
Signature — Date

LETTER TRANSMITTING BRIEF ON APPEAL

Sir:

Submitted herewith is the Brief on Appeal in triplicate for the above-identified patent application.

The Commissioner is hereby authorized to charge all fees which may be required for this application from Deposit Account No. 16-2500 of the undersigned. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

PROSKAUER ROSE LLP

By Charles Gutt
Charles Guttman
Reg. No. 29,161

Date: May 27, 2003

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Enclosure: Brief on Appeal (in triplicate)

Attorney Docket No.: 76138/111

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Appeal Brief (3)

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Diane Koza — May 27, 03
Signature — Date

BRIEF ON APPEAL

Sir:

Appellants submit the following Brief on Appeal. For the reasons contained herein, it is requested that the final Office Action dated February 25, 2003, be reversed.

I. Real Party In Interest

The real party in interest in the present case is WABCO GmbH & Co. OHG, the Assignee of the above-identified patent application. This company has a principal place of business located in Hannover, Germany, and is a wholly owned subsidiary of American Standard Companies, Inc.

II. Related Appeals and Interferences

There are no other appeals or interferences known to Appellants, the Appellants' legal representative, or the Assignee which will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal.

III. Status of Claims

Claims 1-9 are pending in the application.

Claims 1-9 have been rejected in the final Office Action dated February 25, 2003.

The final rejection of claims 1-9 has been appealed.

IV. Status of Amendments

No Amendments have been filed subsequent to the final Office Action dated February 25, 2003.

V. Summary of Invention

Most of today's vehicles are equipped with an anti-lock brake system (ABS) and an automatic drive slip control (often referred to as Anti-Spin Regulation or ASR). ABS and ASR systems may be incorporated into a conventional braking system or into an electronic braking system (EBS). ABS systems are designed to prevent locking or slipping of the wheels during braking on a slippery surface, while ASR systems are designed to prevent locking or slipping of the wheels when a vehicle begins to move on a slippery surface. ABS/ASR systems achieve their functions by comparing the actual speed of the vehicle with the vehicle speed calculated from the rotational speed of the wheels. Any deviation between the two is known as "slip." ABS/ASR systems are designed to actuate the vehicle brakes to limit the slip of the wheels to an optimal desired value, e.g., to a value of approximately 10%. For example, in a vehicle equipped with an ASR system, the wheel speeds of the vehicle are detected by means of rotational speed

sensors which produce signals representative of the vehicle speed. The signals are transmitted to an electronic system where they are processed by means of suitably programmed microprocessors. The electronic system compares the vehicle speed calculated from the rotational speed sensors with the actual vehicle speed as determined by an accelerometer. The electronic system transmits output signals to solenoid valves which control the brakes in order when it detects that the wheels are beginning to lock or slip.

As an alternative to actuating the brakes, the electronic system of an ASR may transmit a signal to the engine to reduce the power transmitted to the drive wheels to achieve the same result.

Conventional ASR systems do not work well when the vehicle is traveling in difficult terrain. The invention disclosed herein overcomes this problem by automatically increasing the permissible drive slip values under conditions of difficult terrain. This method is only applicable in a vehicle wherein the rear wheels are the drive wheels, while the front wheels are non-driven wheels.

In accordance with the present invention, a method for adjusting the normal drive slip value comprises:

(a) evaluating dynamic values associated with the front (non-driven) wheels of a vehicle, and

(b) if the dynamic values associated with the front (non-driven) wheels exceed a threshold value, increasing the normal drive slip values of the rear (drive) wheels.

In a preferred embodiment of the invention, the dynamic values evaluated in step (a) are the acceleration values for each of the front wheels. The foregoing method works especially well when the vehicle is traveling in deep snow (e.g., a snow depth greater than 10 cm). It has been

discovered that the acceleration values of the front wheels are significantly increased when driving through deep snow. This is because when driving during deep snow, snow wedges repeatedly build up for brief times in front of the front wheels. The snow wedges are then compressed and driven over. The numerous fluctuations in the measured dynamic values, especially the acceleration values, of the front wheels may thus be used as a criterion for increasing the drive slip value of the ASR.

VI. Issues on Appeal

The only issue on appeal is whether claims 1-9 are anticipated under 35 U.S.C. 102(a) by Schramm et al., U.S. 5,884,719 (hereinafter, US '719).

VII. Grouping of Claims

Claims 1, 3, 4, and 6-9 stand and fall together.

Claims 2 and 5 are believed to be separately patentable from the foregoing grouping and from each other as the Examiner has given separate reasons for rejecting claims 2 and 5 under 35 U.S.C. 102(a). Additionally, separate reasons are given below for reversing the Examiner's rejection of claims 2 and 5 as being anticipated by US '719.

VIII. Argument

A. The Rejection of Claims 1, 3-4 and 6-9 under 35 U.S.C. 102(a)

In the final Office Action dated February 25, 2003, the Examiner rejected claims 1, 3-4, and 6-9 as being anticipated by U.S. '719. Citing col. 1, lines 60-67, and col. 2, lines 1-35, the Examiner stated that US '719 discloses an apparatus and a method for controlling drive slip for a vehicle which requires traction. As best understood, the Examiner further explained this ground for rejection as follows: "In a condition that the driver travels in a rough terrain or on [a] mountain road with [high] coefficient of friction, the driver push[es] hard the accelerator pedal in

order to decrease the slip value. In a condition that the surface of [the] road with low coefficient of friction when the road surface [is] covered by deep snow or [ice], the driver pushes less [hard] the accelerator pedal, thus, the decreased slip value increases."

In further justifying the rejection, the Examiner stated in the paragraph bridging pages 3 and 4 of the final Office Action dated February 25, 2003, that US '719 teaches that "the non-driven wheels are front wheels, and that the speeds of the non-driven wheels are sent to reference value former 28, which calculates a reference velocity for the drive slip control by averaging the two wheel speed signal values," citing col. 3, lines 28-65. Without any further specific citations, the Examiner also asserted that US '719 provides details "about the case the drive slip value of the driven rear wheels increases when the vehicle [is] traveling on a surface with low coefficient of friction (ice, packed snow)," that "the desired slip value is a function of the position of the gas pedal," and that "according to the level of the gas pedal, the speeds of the non-driven wheels increase or decrease and such speeds [are] compared with the reference velocity for the drive slip control." For these reasons, the Examiner asserted that US '719 "read[s] on the limitations as claimed by the applicant."

With all respect to the Examiner, Appellants believe that the Examiner has failed to show how US '719 meets the limitations of the claimed invention. Specifically, claim 1 is directed to a method for adjusting the normal drive slip value of a vehicle equipped with an ASR system and operating in a rear wheel drive mode. The method of claim 1 requires:

(a) evaluating dynamic values associated with the front wheels of the vehicle; and

(b) if the dynamic values associated with the front wheels exceed a threshold value, increasing the normal drive slip value of the rear wheels.

US '719 discloses a method and an apparatus for drive slip control. However, the method employed by US '719 differs from that set forth in claim 1. According to US '719, the desired value of the drive slip is adjusted as a function of the position of the gas pedal or the engine RPM's. See, e.g., the Abstract and col. 1, lines 66-67, of US '719. This completely misses the point of the present invention wherein the normal drive slip value of the rear (driven) wheels is adjusted, not based on the position of the gas pedal or engine RPM's, but based on the wheel behavior (wheel dynamics) of the front (non-driven) wheels of the vehicle.

US '719 deals with the problem of a vehicle driving on an especially difficult road such as a mountain road or on a loose road surface where high traction is required. Under certain driving conditions, the vehicle's engine can come to a complete standstill if the engine torque is not sufficiently high. This can especially occur during an ASR driven state when the installed ASR slip value is too low. In this state, with low rotational speed, the engine performance is also low.

According to US '719, this problem can be overcome in a vehicle with an ASR system by increasing the slip value when the gas pedal is depressed. See, e.g., Fig. 1, and col. 3, lines 41-46. This system differs from that of the claimed invention in which adjustment of the permissible drive slip value depends on monitoring the dynamic behavior of the front (non-driven) wheels of a vehicle. Appellants' invention is particularly advantageous when driving on a snowy or rough road surface when the dynamic values being monitored are the acceleration values of the front wheels. These values vary considerably under such conditions.

In justifying the rejection on grounds of anticipation, the Examiner asserted that a driver traveling in a rough terrain or on a mountain road with a high coefficient of friction will "push hard on the accelerator in order to decrease the slip value." Similarly the Examiner asserted that

a driver driving on a road surface with a low coefficient of friction, for example, in deep snow or on an icy road, will push the accelerator pedal less, thereby "the desired slip value increases." In the first place, it is improper for the Examiner to rely on such assumptions in order to find the claimed invention anticipated under 35 U.S.C. 102(a). The Examiner has not shown anything in the prior art which teaches a method wherein dynamic values associated with the non-driven wheels are used to adjust the normal drive slip value of the rear wheels. He has simply assumed that a driver will react in certain ways under certain driving conditions which will thereby cause an adjustment of the drive slip values. Relying on such assumptions is improper and amounts to a hindsight reconstruction of the invention.

Moreover, if the Examiner is relying on the doctrine of inherency as to what will occur in the system of US '719, then he must show that every driver will inevitably react in the manner he has described. Inherency may not be established by probabilities or possibilities. Mehl/Biophile Int. Corp. v. Milgraum, 192 F.3d 1365 (Fed. Cir. 1999). However, it is well known that when a driver is driving on a road surface covered by deep snow, and the wheels begin to slip, the initial reaction of the driver is to push harder on the accelerator pedal . See, e.g., col. 1, lines 9-11, of US '719. The driver must be trained to push less hard on the accelerator pedal when traveling under those conditions.

Secondly, the Examiner's statements reflect an incorrect understanding of US '917. Acordingly to the Examiner, pushing hard on the accelerator pedal will decrease the slip value. However, US '917 teaches that pushing hard on the accelerated pedal will increase the slip value. See, col. 4, lines 19-22, and Fig. 2. Similarly, the Examiner stated that pushing less hard on the accelerator pedal will increase the desired slip value. US '917 teaches, however, that pushing less hard on the accelerator pedal will decrease the desired slip value. See, Fig. 2.

In sum, the Examiner has failed to identify any locations in US '719 which teaches the limitations set forth in claim 1. Therefore, it is believed that the rejection of claim 1 as being fully anticipated by US '719 is incorrect.

As all of the other claims in the present application depend from claim 1, and incorporate all of its limitations by reference, it is believed that the rejection of the dependent claims is in error for similar reasons.

B. <u>The Rejection of Claims 2 and 5</u>

The Examiner gave additional reasons for rejecting claims 2 and 5 on grounds of anticipation. With regard to claim 2, the Examiner stated that "the speed of the non-driven wheels are inputted in the first step of determining the desired drive slip." However, claim 2 does not refer to "the speed" of the wheels. Rather, claim 2 refers to "the acceleration values" of the front wheels.

Additionally, the Examiner is in error in asserting that US '917 teaches adjusting the drive slip values based even on the speeds of the front wheels. As is apparent from col. 3, lines 28-30 of US '917, the speeds of the front wheels are inputted into "reference value former 28" which calculates a reference velocity for the vehicle. There is simply no disclosure or suggestion in US '917 that the drive slip value be adjusted even based on the speeds of the front wheels. As stated above, US '917 discloses adjusting the drive slip value based on gas pedal position and engine RPM's.

With regard to claim 5, the Examiner asserted that col. 2, lines 1-14, teaches that "if the vehicle travels on a curve, the drive slip value will not increase." However, there is nothing in col. 2, lines 1-14 which mentions anything about traveling on a curve. There is simply nothing

taught in U.S. '917 about adjusting the drive slip value based on travel in a curve.[1] Again, it appears that the Examiner is engaging in a hindsight reconstruction of the claimed invention.

IX. Conclusion

For the reasons expressed above, reversal of the rejection contained in the final Office Action dated February 25, 2003, is respectfully requested.

Respectfully submitted,

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Date: May 27, 2003

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[1] If what the Examiner means is that when the vehicle travels on a curve, the driver pushes less hard on the accelerator pedal and therefore the drive slip value will not increase, this would contradict the Examiner's prior statement that when the vehicle travels in deep snow or on ice, "the driver pushes less on the accelerator pedal, thus the desired slip value increases."

APPENDIX OF CLAIMS ON APPEAL

1. In a vehicle equipped with an ASR system and operating in a rear wheel drive mode, a method for adjusting the normal drive slip value of the ASR system, comprising

(a) evaluating dynamic values associated with the front wheels of the vehicle, and

(b) if the dynamic values associated with the front wheels exceed a threshold value, increasing the normal drive slip value of the rear wheels.

2. The method of claim 1 wherein the dynamic values evaluated in step (a) comprise acceleration values for each of the front wheels.

3. The method of claim 2 wherein if the difference between the front wheel acceleration values exceeds a given threshold, the normal drive slip value of the rear wheels is increased.

4. The method of claim 1 further comprising determining whether high frequency oscillations are occurring in the rear wheels, and if so, not increasing the normal drive slip values of the rear wheels.

5. The method of claim 1 further comprising determining whether the vehicle is traveling in a curve, and if so, not increasing the normal drive slip value of the rear wheels.

6. The method of claim 1 wherein the increase of the normal drive slip value is limited in dependence on the current vehicle speed.

7. The method of claim 1 wherein the rate at which the normal drive slip value is increased depends on the current vehicle speed.

8. The method of claim 1 wherein the rate at which the normal drive slip value is increased depends on the vehicle acceleration.

9. The method of claim 1 wherein the rate at which the normal drive slip value is increased depends on the position of the accelerator of the vehicle.